Established in 2008

"बेटी बचाओ, बेटी पढ़ाओ"

Jayoti Vidyapeeth Women's University, Jaipur

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IMPACT OF SHOES WITH CORE STRENGTHENING VERSUS IFT WITH CONVENTIONAL EXERCISE IN FEMALE ACADEMICIANS WITH LOW BACK PAIN

Submitted by

REETIKA SINGH

Enrollment No :

JVR-II/22/11063

Under the Guidance of

DR. ANKIT BHARGAVA

Department of Physiotherapy

Faculty of Physiotherapy & Diagnostics

A Synopsis

Proposal Submitted in

fulfillment of the requirements for the award of the Degree of

DOCTOR OF PHILOSOPHY

(PHYSIOTHERAPY)

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INTRODUCTION

Low back pain is usually nonspecific or mechanical. Mechanical low back pain arises intrinsically from the spine, intervertebral disks, or surrounding soft tissues. According to the European Guidelines for prevention of low back pain, low back pain is defined as "pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain". Mechanical Back Pain is pain caused by mechanical problems in the muscles, joints, bones, & tissues. It's usually related to the lumbar spine's gradual degeneration. This degeneration is caused by the normal wear and tear of the bones, discs, and joints of the spine. Mechanical low back pain (LBP) generally results from an acute traumatic event, but it may also be caused by cumulative trauma. Mechanical LBP due to cumulative trauma tends to occur more commonly in the workplace The most common form of low back pain is the one that is called "non-specific low back pain" and is defined as "low back pain not attributed to recognizable, known specific pathology" Low back pain is usually categorized in 3 subtypes: acute, sub-acute and chronic low back pain. This subdivision is based on the duration of the back pain. Acute low back pain is an episode of low back pain for less than 6 weeks, sub-acute low back pain between 6 and 12 weeks and chronic low back pain for 12 weeks or more. Low back pain that has been present for longer than three months is considered chronic. More than 80% of all health care costs can be attributed to chronic back pain. Nearly a third of people seeking treatment for low back pain will have persistent moderate pain for one year after an acute episode. When serious and specific causes of low back pain have been ruled out individuals are said to have non-specific (or simple or mechanical) back pain. Previous research and international guidelines suggest it is not possible or necessary to identify the specific tissue source of pain for the effective management of mechanical back pain. Clinical clues, or red flags, may help identify cases of nonmechanical low back pain and prompt further evaluation or imaging. Red flags include progressive motor or sensory loss, new urinary retention or overflow incontinence, history of cancer, recent invasive spinal procedure, and significant trauma relative to age. Repetitive trauma and overuse are common causes of chronic mechanical low back pain, which is often secondary to workplace injury. MLBP is a cumulative process resulting from poor posture coupled with sedentary habits that put the back under severe mechanical stress. It is described as a musculoskeletal pain which varies with physical activities and not

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involving root compression or serious spinal diseases. There are multiple treatment modalities used for mechanical low back pain. Interferential therapy (IFT) has been reported to be one of the most common electrotherapeutic modalities used by physiotherapists worldwide. The concept of IFT is based on crossing two medium frequency currents (with a carrier frequency between 2 and 10 KHz, most commonly 4 KHz) that reportedly generates a low-frequency 'beating'(amplitude-modulated) effect between 0 and 150 Hz in the deep tissues. 6,7 These beat frequencies are believed to decrease pain in the region of the application and assist with the reduction of oedema and improvement of joint range of motion (ROM) depending on the selected frequency. Core activation or stabilization has become a well-known fitness trend that has started to transcend into the sports medicine world. Broad benefits of core stabilization have been touted, from improving athletic performance and preventing injuries, to alleviating low back pain. If core muscles around the low back are weak, body will rely more on passive structures for stability, including ligaments — the tissue that connects bone to bone — as well as the spinal bones or discs which lie between the spinal bones. This can cause pain. The core is the group of trunk and hip muscles that surround the spine, abdominal viscera and hip. Core muscles are essential for proper load balance within the spine, pelvis, and kinetic chain. They spare the spine from excessive load and are essential for lad transfer between the upper and lower body. The core can be described as a muscular box with the abdominals in the front, paraspinals and glutes in the back, the diaphragm as the roof, and the pelvic floor and hip girdle musculature as the bottom. Core stability exercises have become a popular form of therapeutic exercise and are seen as a critical component to restoring proper kinetic function. The core stabilization is major trend in rehabilitation, it aims at improving stability during functional activities, balance, flexibility, strength training and effectively manage the pain as well. Core stability exercises that improve lumbopelvic stability may be included as a part of prevention and clinical rehabilitation for patients with LBP. The core is a box structure made up of the abdominal muscles in the front and the sides, the paraspinal and gluteal muscles at the back, the diaphragm at the roof, and the pelvic floor and the hip girdle muscles as the floor. Core stability exercises include a range of exercise programs with different approaches, having the common goal of improving lumbopelvic and abdominal control. These exercises are designed to enhance the ability of the neuromuscular and motor control systems to prevent spinal

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injury. Conventional back care exercises are advocated to treat the pain and to strengthen the involved muscles. There will always be the possibility of the pain getting recurred due to disproportionate balance and stability in the muscles. The conventional back care exercises decrease the pain and increase the strength of involved muscles, but results in frequent recurrence rates because of their effectiveness only up to one year and patients are left out with some residual pain and disability. The conventional back exercises strengthen the involved muscles like the abdominals administering various back extension exercises like prone lying and lifting one leg, alternate leg and arm lifts, lifting upper trunk and both legs off the floor. Maintaining or restoring balance is an essential ability for humans in locomotion. Although conventional shoes have traditionally been designed to improve stability and support the foot during gait. Foot function has been suggested to be an aetiological mechanism for the development of LBP. Excessive foot pronation is proposed to produce prolonged internal rotation of the lower limb and disrupt sagittal plane forward progression of the body during gait. This causes significant strain at the sacroiliac and lumbosacral joints contributing to the development of LBP. A rigid high arched foot type has also been associated with the development of LBP. This foot type diminishes the capacity for shock absorption by the foot and so pre-disposes to shock-induced pathology in the lower back. In the presence of excessive or prolonged foot pronation, orthoses have traditionally been prescribed to reduce the extent and velocity of foot movement, correcting lower limb function and proximal posture. In a rigid high arched foot type, shock-absorbing insoles are proposed to reduce the more proximal propagation of shock, subsequently reducing LBP Hence, the purpose of this study is to compare the core strengthening with shoes and IFT with conventional exercise in low back pain female academicians.

REVIEW OF LITERATURE

1. Karran Yangma studied "A Comparative Study to Find the Effectiveness of Core Muscles Activation Over Conventional Exercises In Subjects with Mechanical Low Back Pain " and concluded that Core activation exercises is very effective in reducing the pain and increasing the range of motion and for improving the disability.
2. Suresh Babu Reddy studied "Effectiveness of core stabilization program and conventional exercise in the management of patient with chronic mechanical low

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back pain" and concluded that after the treatment sessions Core stabilization group registered a significant improvement when compared to conventional back care exercises in improving function and in relieving pain.

3. Inani, Sumit B studied that" Effect of core stabilization exercises versus conventional exercises on pain and functional status in patients with nonspecific low back pain".

4. Waxman studied that "A prospective follow up study of low back pain in the community and stated that low back pain is a mutable problem with acute episodes blending into longer periods resulting in more disability as time progresses. A wide range of demographic, pain, consultation, and treatment factors were not predictive of low back pain recovery.

5. JF Lison studied that "Effect of unstable shoes on trunk muscle activity and lumbar spine kinematics" and concluded that Unstable shoes increase trunk muscle activity (ES, RA) and lumbar lordosis during gait compared to control shoes".

6. Vivienne Chuter studied that" Effectiveness of shoe insoles for the prevention and treatment of low back pain: a systemic review and meta-analysis of randomized controlled trial" and stated that There is insufficient evidence to support the use of foot orthoses or insoles as either a treatment for LBP or in the prevention of LBP.

7. Maayah, Mikhled Falaah studied that" Prevalence of low back pain and risk factors in academic teaching staff" and concluded that there is major issue of low back pian in academic staff.

8. Stéphane Armand studied that" Effect of unstable shoes on chronic back pain in health professionals" and concluded that wearing unstable shoes for 6 weeks significantly decreases low back pain in patients suffering from chronic low back pain but had no significant effect on quality of life and disability scores.

9. Edgar RVieira and Denis Brunt stated that" Does wearing unstable shoes reduce low back pain and disability in nurses" and concluded that wearing unstable shoes reduced low back pain and disability in nurses and might be helpful as part of the back pain rehabilitation process.

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NEED OF THE STUDY

To perform the comparison between core strengthening with shoes and IFT with conventional exercise in low back pain female academicians.

SCOPE OF THE STUDY

To determine the effectiveness of core strengthening with shoes over IFT with conventional exercise in low back pain female academicians.

AIM OF THE STUDY

Aim of the study is to compare the effect of core strengthening with shoes over conventional exercise in low back pain female academicians.

OBJECTIVE OF THE STUDY

1. To evaluate and assess the effect of shoes and core strengthening in subacute mechanical low back pain in female academicians.
2. To evaluate and assess the effect of IFT with conventional in subacute mechanical low back pain in female academicians.
3. To compare the effect of shoes with core strengthening versus IFT with conventional exercise in sub acute mechanical low back pain in female academicians.

RESEARCH METHODOLOGY

HYPOTHESIS

- **ALTERNATE HYPOTHESIS**

There will be significant difference in core strengthening with shoes and IFT with conventional exercise in low back pain female academicians.

- **NULL HYPOTHESIS**

There will be no significant difference in core strengthening with shoes and IFT with conventional exercise in low back pain female academicians.

DATA COLLECTION & METHODOLOGY

The subjects were taken from different academic institutes in Jaipur.

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Step 1- All subjects were required to give a consent prior to the participation. Pain intensity, functional disability and range of motion (ROM) of the lumbar region were assessed by Visual Analog Scale (VAS), Revised Oswestry Disability Index (ODI) and Goniometry respectively before commencement of the treatment (Pre-test)

Step 2 - Randomised control distribution among Group A and Group B containing 150 numbers of subjects in each group.

Step 3 - Group A- 150 subjects (Experimental Group- shoes and core activation exercises). Group B- 150 subjects (Control Group- IFT and conventional exercises).

RESEARCH DESIGN

Comparative study

SAMPLE SIZE

300 Patients

SOURCE OF DATA

Sample of 300 subjects will be randomly selected into two groups (150 patients in each)

One group concerned with wearing of shoes with core strengthening and other group concerned with application of IFT and conventional exercise.

INCLUSION CRITERIA

Participants of either gender aged between 18 to 45 years with back pain not exceeding 3 months were included in the study.

EXCLUSION CRITERIA

Any history of fracture of the spinal area in the past

Disc pathologies, Malignancy

Inflammation in the lumbar spine

Nerve root compression

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MATERIALS USED

1. Couch
2. Shoes
3. IFT

OUTCOME MEASURES

- Roland–Morris disability questionnaire
- Oswestry disability index
- The functional rating index
- Numerical pain ratng scale

PROCEDURE

The subjects were allocated in two different treatment groups, Group-A (Shoes & Core Activation exercises) and Group-B (IFT& Conventional exercises) by random sampling, consisting of 150 subjects in each group, demographic data was collected. The demographic data was collected and the assessment before the intervention was taken from the subjects. According to the taken data the intervention has been started for each group for the duration of 12 weeks for each subject. After completion of the 12 weeks intervention period, the post –intervention data has been collected from the subjects.

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